



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/692,994

10/23/2003

Jerome R. Bellegarda

4860P3183

1702

8791

7590

06/25/2007

BLAKELY SOKOLOFF TAYLOR & ZAFMAN

1279 OAKMEAD PARKWAY

SUNNYVALE, CA 94085-4040

EXAMINER

WOZNIAK, JAMES S

ART UNIT

PAPER NUMBER

2626

MAIL DATE

DELIVERY MODE

06/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/692,994	Applicant(s) BELLEGARDA, JEROME R.	
	Examiner James S. Wozniak	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-96 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 21-34, 41-54, 61-74 and 81-96 is/are rejected.
- 7) ☒ Claim(s) 15-20, 35-40, 55-60 and 75-80 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 10/23/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information (*Bellegarda, "Global Boundary-Centric Feature Extraction and Associated Discontinuity Metrics"*) or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specification

2. The disclosure is objected to because of the following informalities:

The serial number of the co-filed application listed on Page 8 of the specification should be updated.

Appropriate correction is required.

Claim Objections

3. **Claims 7, 27, 47, and 67** are objected to because of the following informalities:

In claims 7, 27, 47, and 67, “the plurality of concatenations” should be changed to –a plurality of concatenations-- in order to provide proper antecedent basis for this limitation in the claims.

Appropriate correction is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. **Claims 1-96** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **claims 1-12, 17-36, 41-60, 65-84, and 89-112** of copending Application No. 10/693,227. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims refer to the same process of extracting portions from speech segments, creating/calculating feature vectors that incorporate phrase information, and determining/calculating feature vector distances to determine boundary-related data.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. **Claims 21-40, 61-80, 85-88, and 93-96** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 21 and 85 are drawn to a “program” *per se* as recited in the preamble not stored on a computer-readable medium and not limited to a tangible medium (i.e., “machine-readable medium having instructions to cause a machine” and carrier wave, specification, page 23) and as such is drawn to non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media (i.e., *computer* readable medium storing computer-executable instructions that when *executed by a computer* cause a computer to...) are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed *computer* readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Dependent **claims 22-40 and 86-88** fail to overcome the 35 U.S.C. 101 rejection directed to claims 21 and 85, and thus, are also rejected for being drawn to non-statutory subject matter.

Claims 61 and 93 are drawn to a “program” *per se* as recited in the preamble (*i.e.*, *body of the claim is directed to the program process description (“a process executed...”)* rather than *in terms of the memory (--the memory storing a process executed by the processing unit to cause the processing unit to:--)*) and as such is drawn to non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed *computer* readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, *i.e.*, the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Dependent claims 62-80 and 94-96 fail to overcome the 35 U.S.C. 101 rejection directed to claims 61 and 93, and thus, are also rejected for being drawn to non-statutory subject matter.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1, 4-10, 21, 24-30, 41, 44-50, 61, 64-70, 81, 85, 89, and 93** are rejected under 35 U.S.C. 102(b) as being anticipated by Narayan (*U.S. Patent: 5,490,234*).

With respect to **Claims 1, 21, 41, and 61**, Narayan discloses:

Extracting portions from segment boundary regions of a plurality of speech segments, each segment boundary region based on a corresponding initial unit boundary (*extracting ending and beginning frames respectively from left and right diphone segments located in a concatenation boundary region that corresponds to a middle boundary of a phoneme, Col. 11, Lines 4-27; and Col. 1, Lines 48-53*);

Creating feature vectors that represent the portions in a vector space (*determining feature vectors for the extracted left and right frames, Col. 11, Lines 28-67*);

For each of a plurality of potential unit boundaries within each segment boundary region, determining an average discontinuity based on distances between the feature vectors (*optimum blend point determination based on a average vector difference function, Col. 11, Lines 50-67*); and

For each segment, selecting the potential unit boundary associated with a minimum average discontinuity as a new unit boundary (*selection of the optimum blend point that falls within the left and right frames, Col. 11, Line 50- Col. 12, Line 8*).

Narayan further discloses method/system implementation as a program stored in a computer-readable memory that is accessible by a CPU via a bus (*Col. 4, Lines 43-67; and Col. 16, Lines 32-43; and Fig. 1*).

With respect to **Claims 4, 24, 44, and 64**, Narayan further discloses:

The average discontinuity is determined over a plurality of concatenations (*average distance calculation performed over a plurality of different concatenation points, Col. 11, Lines 50-67*).

With respect to **Claims 5, 25, 45, and 65**, Narayan further discloses:

The initial unit boundary is in the middle of a phoneme (*concatenating point at a phoneme center, Col. 1, Lines 48-53; and Col. 11, Lines 4-22*).

With respect to **Claims 6, 26, 46, and 66**, Narayan further discloses:

Each potential unit boundary defines two candidate units for each speech segment (*boundary that defines potential left and right diphone units, Col. 11, Lines 4-67*).

With respect to **Claims 7, 27, 47, and 67**, Narayan further discloses:

A concatenation of the plurality of concatenations includes a candidate unit of a first segment linked to a candidate unit of a second segment (*analyzing a plurality of concatenation boundaries by connecting a left diphone to a right diphone, Col. 11, Lines 50-67*).

With respect to **Claims 8, 28, 48, and 68**, Narayan further discloses:

The plurality of concatenations includes all combinations of a first candidate unit of each segment with a second candidate unit of each segment (*searching an entire concatenation range for an optimized boundary point, Col. 11, Lines 50-67*).

With respect to **Claims 9, 29, 49, and 69**, Narayan further discloses:

The plurality of speech segments includes speech segments that end in the middle of a first phoneme, and speech segments that begin in the middle of a first phoneme (*diphones, Col. 1, Lines 48-53; and Col. 11, Lines 4-22*).

With respect to **Claims 10, 30, 50, and 70**, Narayan further discloses:

The plurality of speech segments is stored in a voice table (*voice table, Col. 4, Lines 43-67*).

Claims 81, 85, 89, and 93 contains subject matter similar to Claims 1 and 4, and thus, is rejected for the same reasons.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 2-3, 11, 22-23, 31, 42-43, 51, 62-63, and 71** are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayan in view of Pauws et al (*U.S. Patent: 6,208,967*).

With respect to **Claims 2, 22, 42, and 62**, Narayan discloses the speech synthesis method/system utilizing diphone blending point determination as applied to Claim 1. Although Narayan discloses repeatedly performing a search for an optimum boundary point (*Col. 11, Lines 50-67*), Narayan does not specifically suggest iterative processing wherein a new boundary is set as a final boundary if it is the same as an initial unit boundary. Pauws, however, discloses a method for determining an optimum boundary within a phoneme that is continued until no further improvement is achieved between iterations (*Col. 4, Lines 35-61*).

Narayan and Pauws are analogous art because they are from a similar field of endeavor in speech synthesis systems utilizing diphones. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Narayan with the iterative procedure taught by Pauws in order to further minimize distortion by determining optimum boundaries (*Pauws, Col. 4, Lines 35-61*) and eliminate unnecessary processing when no improvement is achieved.

With respect to **Claims 3, 23, 43, and 63**, Narayan discloses the steps of extracting, creating, determining, and selecting as applied to claim 1, while Pauws discloses the concept of continuing iterative processing in determining an optimal boundary if there is an improvement or difference between boundaries in each iteration, as applied to Claim 2.

With respect to **Claims 11, 31, 51, and 71**, Pauws further discloses:

Recording speech input (recording user input via a microphone, *Col. 3, Lines 19-23*);

Identifying the speech segments within the speech input (*speech input segmentation, Col. 3, Lines 19-53*).

12. **Claims 12-13, 32-33, 52-53, and 72-73** are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayan in view of George et al (*U.S. Patent: 6,304,846*).

With respect to **Claims 12, 32, 52, and 72**, Narayan discloses the speech synthesis method/system utilizing diphone blending point determination as applied to Claim 1. Narayan does not specifically suggest that the extracted portions include centered pitch periods, however, such centered pitch periods are well known for use in speech synthesis concatenation, as is evidenced by George (*Col. 12, Line 63- Col. 13, Line 27*).

Narayan and George are analogous art because they are from a similar field of endeavor in speech synthesis systems utilizing diphones. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Narayan with the centered pitch periods taught by George in order to further ensure coherency between adjacent speech synthesis frames (*George, Col. 12, Lines 63-65*).

With respect to **Claims 13, 33, 53, and 73**, George further discloses:

The feature vectors incorporate phase information of the portions (*feature vectors, Col. 10, Lines 42-65; comprising phase information, Col. 13, Lines 20-27*).

13. **Claims 14, 34, 54, and 74** are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayan in view of George et al and further in view of Ahlbom et al (*"Modeling Spectral Speech Transitions Using Temporal Decomposition Techniques," 1987*).

With respect to **Claims 14, 34, 54, and 74**, Narayan in view of George discloses the speech synthesis system utilizing diphone blending point determination and centered pitch periods, as applied to Claim 13. Narayan in view of George do not teach creating feature vectors

by constructing a matrix and decomposing the matrix, however Ahlbom discloses a method for obtaining vector values for determining diphone break points using singular value decomposition of a matrix Y (*Pages 13-14*).

Narayan, George, and Ahlbom are analogous art because they are from a similar field of endeavor in speech synthesis systems utilizing diphones. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Narayan in view of George with the singular value decomposition method taught by Ahlbom in order to provide a means for adequately describing the temporal evolution of speech parameters (*Ahlbom, Introduction, Page 13*).

14. **Claims 82, 86, 90, and 94** are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayan in view of Ahlbom et al ("*Modeling Spectral Speech Transitions Using Temporal Decomposition Techniques*," 1987).

With respect to **Claims 82, 86, 90, and 94**, Narayan discloses the speech synthesis method/system utilizing diphone blending point determination as applied to Claim 81. Although Narayan discloses repeatedly performing a search for an optimum boundary point (*Col. 11, Lines 50-67*), Narayan does not specifically suggest iterative processing wherein a new boundary is set as a final boundary if it is the same as an initial unit boundary. Ahlbom, however, discloses such an iterative processing concept (*Iterative Refinement and Robustness, Page 14*).

Narayan and Ahlbom are analogous art because they are from a similar field of endeavor in speech synthesis systems utilizing diphones. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Narayan with the

iterative method taught by Ahlbom in order to provide a means for adequately describing the temporal evolution of speech parameters while minimizing a speech synthesis error (*Ahlbom, Introduction, Page 13; and Iterative Refinement, Page 14*).

With respect to **Claims 83, 87, 91, and 95**, Ahlbom discloses a method for obtaining vector values for determining diphone break points using singular value decomposition of a matrix Y (*Pages 13-14*).

15. **Claim 84, 88, 92, and 96** are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayan in view of Ahlbom et al and further in view of George et al (*U.S. Patent: 6,304,846*).

With respect to **Claim 84, 88, 92, and 96**, Narayan in view of Ahlbom discloses the speech synthesis method/system utilizing diphone blending point determination as applied to Claim 83. Narayan in view of Ahlbom does not specifically suggest that the extracted portions include centered pitch periods, however, such centered pitch periods are well known for use in speech synthesis concatenation, as is evidenced by George (*Col. 12, Line 63- Col. 13, Line 27*).

Narayan, Ahlbom, and George are analogous art because they are from a similar field of endeavor in speech synthesis systems utilizing diphones. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Narayan in view of Ahlbom with the centered pitch periods taught by George in order to further ensure coherency between adjacent speech synthesis frames (*George, Col. 12, Lines 63-65*).

Allowable Subject Matter

16. **Claims 15-20, 35-40, 55-60, and 75-80** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter:

With respect to **Claims 15, 35, 55, and 75**, the prior art of record fails to explicitly teach or fairly suggest, either individually or in combination, a method that determines an optimal boundary for speech synthesis units based on an average discontinuity between created feature vectors around a phoneme segment boundary (*Fig. 2*) that correspond to centered pitch periods and that are created using a singular value decomposition of a matrix W that is defined in claims 15, 35, 55, and 75.

Although Narayan (*U.S. Patent: 5,490,234*) discloses a method for determining an optimal boundary point between speech synthesis diphones (*Col. 11, Line 50- Col. 12, Line 8*), George et al (*U.S. Patent: 6,304,846*) discloses centered pitch periods are well known for use in speech synthesis concatenation (*Col. 12, Line 63- Col. 13, Line 2*), and Ahlbom et al ("*Modeling Spectral Speech Transitions Using Temporal Decomposition Techniques*," 1987) discloses a method for obtaining vector values for determining diphone break points using a singular value decomposition of a matrix Y (*Pages 13-14*), the combination of the prior art of record does not teach feature vector creation for optimal boundary determination using a singular value decomposition of the specific matrix having elements based on centered pitch periods as defined

in claims 15, 35, 55, and 75. Although George discloses using centered pitch periods for concatenation and Ahlbom discloses the use of singular value decomposition of a matrix to determine diphone break points, the combination of the teachings of George and Ahlbom does not explicitly teach or suggest how centered pitch periods can be used to construct the singular value decomposition matrix defined in claims 15, 35, 55, and 75 to create two feature vectors used in the distance calculation defined on page 16 of the specification, the result of which is subsequently utilized in selecting new unit boundaries.

The further dependent claims additionally limit objected parent claims containing allowable subject matter, and thus, contain allowable subject matter.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Huang et al (*U.S. Patent: 5,913,193*)- discloses an iterative process for searching for synthesis units that concatenate smoothly.

Donovan et al (*U.S. Patent: 6,266,637*)- discloses an iterative process for searching for synthesis units that concatenate smoothly.

Campbell et al (*U.S. Patent: 6,366,883*)- discloses a means for selecting synthesis units based on a concatenation cost.

Conkie (*U.S. Patent: 6,505,158*)- discloses a method for selecting diphone units for speech synthesis based on a spectral mismatch between contiguous units.

Coorman et al (*U.S. Patent: 6,665,641*)- discloses a speech synthesis system that selects synthesis units based on a vector distance calculation.

Beutnagel et al (*U.S. Patent: 6,697,780*)- discloses a method for selecting acoustic units that minimize concatenation costs.

Okutani et al (*U.S. Patent: 6,980,955*)- discloses a means for selecting synthesis units based on a concatenation cost.

Coorman et al (*U.S. Patent: 7,058,569*)- discloses a method for determining an optimum blending point in speech synthesis.

Atal ("*Efficient Coding of LPC Parameters by Temporal Decomposition*," 1983)- discloses a method for modeling continuous variations of speech parameters using singular value decomposition.

Donovan ("*A New Distance Measure for Costing Spectral Discontinuities in Concatenative Speech Synthesizers*," 2001)- discloses a method for determining a concatenation cost in synthesis unit selection based on a distance measure.

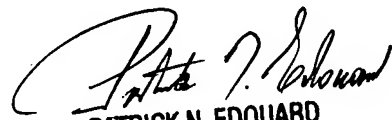
Vepa et al ("*New Objective Distance Measures for Spectral Discontinuities in Concatenative Speech Synthesis*," 2002)- discloses a method for speech synthesis unit selection utilizing a join cost.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
6/12/2007


PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER